

September 1970

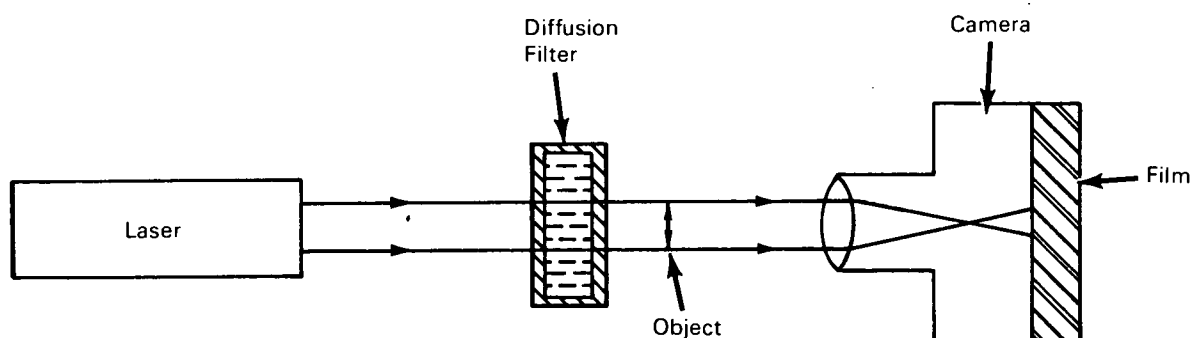
Brief 70-10226

NASA TECH BRIEF



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Division, NASA, Code UT, Washington, D.C. 20546.

Diffusion Filter Eliminates Fringe Effects of Coherent Laser Light Source



The problem:

The coherence property of a laser beam used as a photographic light source causes interference patterns which obscure details in the photographic film.

The solution:

A diffusion filter (see fig.) comprised of small particles in colloidal suspension reduces the coherence of the laser beam. The intensity and collimation are moderately affected.

How it's done:

The size of the particles is selected to be larger than the wavelength of the laser beam, so that ordinary diffuse reflection from the surface of the particles will occur without degradation of the laser frequency. It is preferable to utilize a disperse phase of solid particles in a state of subdivision adapted to form a colloidal suspension in a liquid disperse medium. In a solid-liquid colloidal suspension, the fine particles remain suspended and will not readily settle out. Therefore, homogeneity without external mixing of the suspension is inherently achieved. Suitable colloidal suspensions are prepared by suspending col-

loidal size particles, such as milk solids or gold particles in water.

Notes:

1. The diffusion filter is a very useful tool in high-speed photography applications which require exceptional resolution.
2. Requests for further information may be directed to:

Technology Utilization Officer
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B70-10226

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: M. J. Olsasky of
North American Rockwell Corporation
under contract to
NASA Pasadena Office
(NPO-10417)
Category 03